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DEVELOPMENTS IN THE SOVIET ECONOMY, 1968-69

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Foreword

Throughout this report, the aggregative statistics or indexes which are presented have been, for the most part, calculated by agencies of the U.S. Government. Most of the official Soviet aggregate measures of growth in the economy (including growth of national income and of industrial and agricultural output) are not accepted by Western economists. Moreover, some official commodity data such as those relating to grain production have been rejected. Substitute measures constructed by U.S. Government economists and other Western economists almost invariably indicate that there are substantial degrees of over-statement in the Soviet measures.

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I. General Trends in 1968 and First Half of 1969

The Soviet economy expanded at a moderate pace in 1968. GNP rose 5½ percent in real terms, compared with an average annual increase of nearly 6 percent during 1966-67 (see Table 1).* In all of the major sectors the rates of growth were below those of 1966-67 but, with the notable exception of industry, were well above the rates achieved in 1961-65. The rate of growth of industrial production was the lowest posted since 1964.

The allocation of output among the principal end uses (consumption, investment, and defense) in 1968 continued to some degree the policies of 1966-67, which favored the military and consumer at the expense of growth-oriented investment. The growth of outlays for both consumption and defense, while less rapid in 1968 than in 1966-67, still was well above that in 1961-65. Although the rate of growth of total investment remained at the relatively high level of 1967, the fragmentary data available suggest that the share of consumer-oriented investment rose more rapidly than that of producer-oriented investment as in 1966-67.** The swing in favor of consumption that has been in progress since 1965 was designed to compensate for the neglect of housing, services, and consumer goods production during 1961-64, when relatively greater emphasis was placed on the growth of investment in the producer-oriented sectors of the economy (especially heavy industry, transportation, and communications).

* Tables appear in Appendix. The base year for the calculation is the year before the stated initial year of the period; that is, the average annual rate of increase for 1966-67 is computed by relating GNP in 1967 to base year 1965.

**Consumer-oriented investment includes investment in agriculture, light and food industry, housing, and services.

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The chronic problems and inefficiencies in the management of investment programs continued in 1968 and in some respects apparently grew worse. As illustrated in Table 2, gross additions of new fixed capital and the rate of growth in labor productivity in construction fell sharply. In addition, the backlog of unfinished construction increased by nearly 15 percent. The recurrent campaigns launched during the year to reduce, or at least to stabilize, the vast amount of capital tied up in uncompleted investment projects (equal in value to 80 percent of the total 1968 investment program) came to naught, as have similar campaigns in the past.

Present indications, based on published plans for 1969 and results for the first six months, are that the Soviet economy will grow somewhat more slowly in 1969 than in 1966-68. Perhaps overall growth will be less than 5 percent in 1969. Even with above average weather during the balance of the current crop season, agricultural output probably will grow less rapidly than in 1968. This will be due in part to the continuation in 1969 of the relatively low rates of growth posted in 1968 in allocations of fertilizer and other industrial inputs to the farms. Calculations based on Moscow's official mid-year report show an estimated increase of approximately 5.5 percent in industrial output during January-June 1969 over the corresponding period in 1968. This is below the rate of the Soviet plan goal for industry--an increase of 7.3 percent for 1969--which is one of the lowest on record. Although part of the shortfall in the growth rate in the first half was the result of disruptions in the first quarter caused by unusually severe winter weather, the outlook for resurgence in Soviet industrial growth during the rest of the year is not good. The continued lag in the rates of growth of selected industrial materials--especially ferrous metals, fuels, and basic chemicals--indicates a constraint on the

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growth of other industries for at least the third quarter. More important for the longer run is the continued poor performance posted in expenditures on new plant and equipment. The rate of increase in overall investment in the first half was the lowest in the post-Khrushchev era. Organizational and supply difficulties, shortages of resources, and the severe winter probably all contributed to this result.

Results for the first half indicate a continuation of the general trends of the past several years. In the distribution of resources, Defense and consumption again have been favored. There is no indication of a resurgence in growth-oriented investment. Comparison of the output of civilian machinery with the Soviet-announced growth for all machinery indicates that another sizeable increase in expenditures for military and space equipment took place.

The regime's intention to continue the recent high rates of improvement in consumer welfare is reflected in the planned rise of 5½ percent in per capita real income in 1969 (for the year as a whole). Although incomplete, the data available for the first half indicate that the requisite planned boost in disposable money income is being met. However, first half results also suggest a further increase in the gap between purchasing power and supply of real goods and services. The provision of personal services and consumer durables maintained the high rates of growth achieved previously but a decline in supplies of relatively high priced commodities such as meat, fresh fruit, and vegetables forced the consumption of cheaper and less desirable foods, especially the starchy staples (grain products and potatoes) in order to maintain the daily caloric intake. Hence, the amount of money in the Soviet citizen's pocket continued to increase faster than production of things he can spend it on. Savings deposits increased at an annual rate of nearly 20 percent as consumers continue to set aside much of their nominal purchasing power.

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A. Agriculture

Agricultural output rose 4 percent in 1968, the fifth year of increase in a row. Output in the five years 1964-68 averaged more than one-fifth above the level of 1959-63, when production nearly stagnated. The relatively good performance of Soviet agriculture in 1968 was highlighted by an estimated increase of 5 percent in crop production. Livestock production, however, was up only 2½ percent (see Table 3).

The increase in total crops was due mainly to a bumper grain harvest and record outputs of potatoes and sugar beets. The grain crop amounting to 135 million tons was the second largest in history, ranking next to the record crop of 140 million tons harvested in 1966. The government purchased 69 million tons of grain from producers of the 1968 crop, one-fifth above average annual procurements in 1965-67. As a result, supplies of grain will be ample to meet domestic needs for high-quality bread supplies in 1969. They will, moreover, enable the USSR to export grain for the second year in succession and to increase grain reserves. Reserve stocks of grain at the end of the current consumption year (31 July 1969) were probably on the order of 20 million to 25 million tons, equal to about one-half of the annual consumption of grain for food. Thus the USSR is in a relatively good position to withstand a moderate decline in grain production in 1969 without having to import grain.

Even though weather and growing conditions were not uniformly favorable, relatively large yields for most crops were obtained in 1968. Moisture conditions for crops in some major regions were subnormal, but above-normal conditions prevailed in other areas. On balance, weather was slightly more favorable in 1968 than in 1967 and thus contributed to boosts in yields per acre of most crops; other contributing factors were continued improvements in tillage practices and the use of better plant varieties and soil additives (fertilizer and lime).

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Although crop prospects in the USSR as of early June 1969 seemed relatively favorable, weather conditions during the remainder of the crop season will be more decisive than usual in determining the final outcome. Production of grain currently is expected to be well below the near-record production of 1968 but somewhat above the average level of output achieved in 1965-68.

The crop situation to date is characterized by a moderate shift in the acreage pattern in favor of spring grains, the delayed sowing of spring crops, and an unevenness in the supply of soil moisture in the areas normally accounting for the major share of grain. Fall-sown grains were adversely affected by a severe winter that caused higher-than-normal rates of winterkill. Moreover, prospects on the remaining acreage of winter wheat are unfavorable as a result of a late spring accompanied by below-normal precipitation in much of the winter wheat belt.

On the other hand, the outlook for spring grains is relatively favorable in most areas. The supply of moisture in most of the New Lands area of Siberia and Kazakhstan is exceptionally high, and a repeat performance of the outstanding 1966 yield in the New Lands is possible. Nevertheless, the tardiness in development of both winter-sown and spring-sown grains, and a shorter-than-normal growing season make the weather during the next several months more than normally a decisive factor in the size of the harvest.

Because an abnormal workload during August and September is expected as a result of the compressed growing season and a shortened harvesting period, the Soviet government has recently taken special measures in an effort to insure a good harvest. The provisions of a mid-June decree pertaining to the harvest imply an above-normal mobilization of the nonfarm population for harvest work and a greater-than-normal diversion of trucks from other sectors of the economy to agriculture. These special measures, in turn, will have an adverse effect on the rest of the economy.

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In contrast to the large increase in output of crops, the tonnage of major livestock products produced in 1968 increased at less than half the rate achieved in 1966-67. Meat production increased only one percent and milk output rose less than 3 percent. Livestock output was hampered in part by a decline in farm supplies of feed carried over from the preceding harvest, by relatively poor grazing conditions during the spring months in areas affected by drought, and by the moderate reduction in hog numbers on collective and state farms that occurred in 1967. The most important factor in the sharp slowdown in the growth of livestock production, however, was the absolute decline in output in the private sector. One of the first--and certainly the most popular--acts of the Brezhnev-Kosygin leadership in 1965 was to relax Khrushchev's restrictions on private farming. In 1965--the first year in which the more lenient policy was in operation--private livestock holdings spurted by 13 percent, and in 1966 the private sector contributed more than two-fifths of the total output of livestock products. After 1966, however, the size of private herds declined and by the end of 1968 had returned to a level only 5 percent above that of 1964. The reason for this phenomenon is not apparent.

In conjunction with other factors, the striking success in boosting overall farm output in 1966-68 apparently has led to a serious weakening of the commitment in the 1965 Brezhnev program to accelerate development of agriculture. The allocation to agriculture of machinery, fertilizer, and other industrially produced materials in 1968 either continued at unimpressive rates of growth or declined. Although the rate of growth of total agricultural investment increased a little in 1968, most of the increase represented construction activities, since the rates of growth in deliveries of tractors and trucks to farms fell sharply (see Table 4). The supply of mineral fertilizer increased in 1968, but its rate of growth was the lowest since 1961. And again in 1968, little or no progress was made toward the goal of expending the stock of reclaimed

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(irrigated or drained) land. Annual gross additions to both irrigated and drained land remained at about the 1966-67 level and, cumulatively for the years 1966 through 1968, are only slightly over one-third of the target for the 1966-70 period. The actual stock of reclaimed land has remained unchanged because of the withdrawal from use of land previously reclaimed. Its average quality, however, is now higher.*

B. Industry

Soviet industrial growth slowed in 1968 (see Table 5). This slowdown was largely attributable to a sharp drop-off in the rate of growth of output in the industrial materials sector. Growth of output in the machinery and nondurable consumer goods sectors continued at rates roughly approximating those achieved in 1966-67, but higher than those for 1961-65. Total output of the machinery sector--the source of producers' equipment, military equipment, and consumer durables--increased by 8½ percent in 1968, continuing to grow significantly faster than either of the other sectors.

The various major branches of industry expanded at widely different rates in 1968, and the rates of growth of many important industrial products fell off (see Table 6). The growth of industrial materials as a whole dropped sharply in 1968. Coal production failed to increase as the USSR continued to concentrate on modernizing producing facilities rather than on increasing current production. Although production of crude oil and natural gas grew by 7 percent, this rate was significantly below the rates posted in 1966-67. In ferrous metallurgy, the rate of growth for output of pig iron sagged and the rates for crude steel and rolled steel

* For further details concerning recent developments in allocational policies toward agriculture, see Section II, A, below.

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dropped off sharply from 1966-67 levels. Moreover, plans to improve the assortment of steel products, largely through expanded production of flat rolled steel, remained well behind schedule. The lack of the engineering experience needed to move ahead in cold rolling of steel, combined with delays in completing new capacity, is continuing to prevent a more economical use of the huge volume of crude steel (107 million metric tons in 1968) available. Growth of output of construction materials--a key factor in Soviet investment programs--also dropped sharply in 1968.

The record of production of consumer nondurable goods was marked by mediocre performance in soft goods as well as in processed foods. The increase in output of processed foods was held down by a sharp drop in the growth of production of industrially processed meat and vegetable oil, especially in the second half of the year. Stagnation of output of these two basic food commodities reflected a leveling off in the flows of raw materials from agriculture. In soft goods, the output of leather footwear increased at a somewhat slower pace than in 1966-67. Reflecting the steady shift away from home-sewn clothing, the output of sewn garments increased by 15 percent, somewhat more rapidly than in 1966-67.

The slowdown in overall industrial growth in 1968 was the result of a slowdown in the growth of inputs of labor and capital and of the efficiency with which they were used. Productivity growth in 1968 was slightly below the low average of 1961-65. The near collapse of productivity growth in those years was a main reason for the launching of an economic reform by the Brezhnev-Kosygin leadership. Despite the fact that by the end of 1968 over 70 percent of industrial output was produced by enterprises working under the reform, annual productivity gains in Soviet industry in 1966-68 were still less than half as large as in the 1950's. The economic reform has yet to prove its worth, and the prospects of its doing so are most unpromising.

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A notable development--as a harbinger of problems for future industrial growth--was the continuation in 1968 of the slackening off in the addition of new production capacities in many branches of industry (see Table 7). The decreases from 1966-67 levels were particularly notable in coal, oil and gas pipelines, rolled steel, chemical fibers, and--interestingly enough--motor vehicles. Despite much fanfare and several decrees about expanding capacities in the light and food industries, meat and milk plants are being built at the unspectacular rates of the early 1960's. Capacities to produce shoes, on the other hand, have increased spectacularly, perhaps because the regime would like to stop spending scarce foreign exchange to import shoes from the West. Some of the slowdown in additions of new plants, as well as their distribution among industries, apparently represents cutbacks in investment and shifts in priorities. Another major factor is the apparent worsening of the chronic problems of construction in the Soviet economy, resulting in abnormally long construction times compared with experience in the West and with the Soviet government's own established norms.

During the 1960's, when annual productivity gains in industry fell far below those of the 1950's, the USSR directed more and more resources to civilian research and development. In 1951-60 outlays for civilian research and development averaged nearly \$1.5 billion a year; in the next eight years, 1961-68, outlays soared to an average of \$3 billion a year. To the extent that the rate of growth in productivity reflects the rate of innovation or technical progress, the Soviet leadership could well wonder at the contrast between the behavior of productivity and the size of expenditures on research and development.*

* For a more detailed discussion of the problem of adapting new technology, see Section II, B, below.

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C. Consumer Welfare

The upward trend of recent years in the level of living of the Soviet population continued during 1968. According to Soviet data, real income per capita (which includes wages, farm incomes-in-kind, and payments from the state budget) rose slightly more than 6 percent, about the same rate as in 1966-67 (see Table 8). Per capita consumption of goods and services, however, rose by slightly less than the 5 percent average annual rate of the preceding two years. Some letdown in the rate of growth of consumption was anticipated after an all-out effort by the regime in 1967, occasioned by the fiftieth anniversary jubilee year celebration, to give the consumer a better shake. As in the past several years, consumers continued to salt away much of their excess purchasing power in savings banks. For the third year in a row, savings deposits rose by 20 percent. The rise in 1968, 5½ billion rubles, was equivalent to approximately 40 percent of the increase in personal income. At the end of 1968, total deposits amounted to one-fifth of the year's level of personal income, compared with one-eighth in 1960.

The excess purchasing power was also reflected in rising prices in the collective farm market, the only organized free market in the USSR. Prices for perishable foods in Moscow collective farm markets were up 8½ percent in the last half of 1968, compared with the corresponding period in 1967. Average earnings of wage and salary workers rose by 7½ percent in 1968, compared with 4 percent in 1967. The main reason for the sharp rise in money wages during 1968 was the implementation of a wage reform that raised wage rates substantially for 1.5 million machine tool operators, increased the general minimum wage by 50 percent (from 40 to 60 rubles a month), and reintroduced longevity payments for workers in remote regions. Accelerated growth of public consumption funds was in large measure a result of pension reforms that provide broader coverage and higher benefits.

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The rates of improvement in per capita consumption differed considerably among the various categories. Per capita consumption of food, which comprises over half of personal consumption in the USSR, increased by nearly 3½ percent in 1968. As a result of the boost in farm supplies of meat and milk in 1967 and early 1968, the quality of the diet improved. In contrast, the rate of growth of per capita consumption of soft goods fell from nearly 8 percent in 1967 to slightly over 6 percent in 1968, while the rate for consumer durables fell from 9½ percent to 7 percent. As in 1967, imports of consumer goods from both Eastern and Western Europe--largely readymade clothing and shoes--helped to compensate for inadequate domestic production and provided goods of higher quality. The slower expansion of sales of consumer durables--notably refrigerators and washing machines--reflected a fall-off in growth of production of some of these goods.

Improvement in housing conditions continued to be minuscule. Housing completions in 1968 were below those in 1967. These, however, permitted a 3 percent increase in the stock of available housing and made possible a slight increase in per capita living space to 76 square feet--still far short of the official standard the Soviet authorities themselves have set as a minimum for health and decency (97 square feet per capita).

In 1968, consumers also reaped some benefits from the accelerated efforts of the past several years to modernize the grossly inadequate domestic trade network, to expand educational and child care facilities, and to construct public buildings and municipal facilities to meet the needs of growing urbanization. Even more welcome to consumers, perhaps, was the substantial expansion (17 percent) in the supply of state-provided "everyday" services (ranging from barber shops and public baths to shoe and clothing repair and cleaning). The backlog of needs in all of these long-neglected areas of personal and communal services is still enormous, however.

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D. Foreign Trade

Over the past decade, Soviet foreign trade has grown at an annual rate of about 9 percent--from a level of \$8.6 billion in 1958 to more than \$20.0 billion in 1968. Growth has been uneven, particularly in 1959 and the early 1960's when^a significant contraction in trade with China occurred. During the period 1963-66 the pace of Soviet foreign trade growth slowed, and in 1965-66 it was only 4 percent annually, largely because trade with Eastern Europe increased only 2 percent for the two years. Trade has increased more rapidly since 1966, however, rising by an average annual rate of 9 percent in 1967-68, led by an increase of almost 11 percent annually in trade with Eastern Europe (see Table 9).

Ten years ago the share of the Communist world in Soviet foreign trade was about three-fourths, but in recent years the Free World's share has risen to roughly one-third, largely as the result of the rapid growth in trade with the Industrial West. The decline in trade with China also was an important factor in the reduced share of the Communist world. Eastern Europe's share has not changed significantly over the decade, but such countries as Cuba and Yugoslavia have become more important in Soviet trade.

Soviet exports have been dominated by fuels, raw materials, and semifinished materials throughout the postwar period, but exports of machinery and equipment have increased significantly--from \$800 million in 1958 to about \$2.3 billion in 1968 (see Table 10).^{*} Most Soviet exports of machinery and equipment have gone to Eastern Europe, and this area has accounted for most of

^{*} Detailed commodity data are available only for the period through 1967. Some approximate figures are available for 1968.

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the recent increase in these exports. Most of the remainder is destined for the less developed countries of the Free World. Oil exports almost tripled in the period 1958-67 but did not occupy a significantly greater share in 1968, when they were valued at roughly \$1.3 billion, than in 1958. The recent growth in exports of oil has resulted from sharply increased exports to the Industrial West, at least until 1968 when such exports apparently increased negligibly. Food exports have now regained their former importance after grain exports fell sharply in 1964-66. Grain exports valued at \$450 million in 1967 represented an increase of more than \$200 million over the 1966 level. The USSR is once more a net exporter of grain, achieving a net surplus of 4.1 million tons in 1967 following a 1966 net deficit of 4.2 million tons.* The USSR, however, has maintained with the Industrial West the net import position in grain that it has had since 1963.

Soviet imports for the past decade have featured machinery and equipment as well as consumer goods. Imports of machinery and equipment--three-fourths of which originate in Eastern Europe and most of the remainder in the Industrial West--increased from \$1.1 billion in 1958 to about \$3.5 billion in 1968. Imports of consumer goods, valued at \$2.9 billion in 1967, have grown little in recent years because of a decline in food imports, particularly wheat in 1967. Manufactured consumer goods have figured more importantly in Soviet imports in the last few years, rising from \$1.1 billion in 1965 to roughly \$1.8 billion in 1967. Most of these products originate in Eastern Europe, but the Industrial West has provided substantial quantities since 1966.

* In 1968 both exports and imports declined, but the USSR maintained its net surplus.

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E. Hard Currency Trade

Well over half of the USSR's trade with the Free World and more than 80 percent of its trade with the Industrial West is conducted in hard currencies. The USSR attaches special importance to this trade because of its need for Western equipment and technology and other materials which are in short supply in the USSR. Until recently the failure of the USSR to generate sufficient hard currency earnings through exports led to disequilibrium in the Soviet hard currency balance of payments, characterized by substantial annual deficits and consequent reduction in the USSR's gold reserve.

The Soviet gold reserve had been husbanded carefully during Stalin's time, but Khrushchev did not believe in "sitting on sacks of gold" and used it freely to help finance growing imports of Western equipment and technology. Gold sales averaged well over \$200 million annually during the period 1955-62 and increased to more than \$500 million annually during the period 1963-65 to help pay for about \$1.7 billion in wheat from hard currency countries. Annual gold production was less than sales in every year during the period 1956-65 with a consequent reduction in the Soviet gold reserve. Reserves at the end of 1963 were estimated to be less than \$2 billion. Sales during the period 1964-65 approximated \$1 billion and production was about \$350 million so that by the end of 1965 reserves had fallen at least an additional \$650 million.* Since that time (1966-68), the USSR produced \$600 million but has sold only about \$65 million, and reserves have risen accordingly.

The hard currency deficits were considerably less than might have been expected, however, averaging about \$360 million annually during

* Domestic consumption is not considered.

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1963-66 despite wheat imports of about \$400 million annually (see Table 11). This result was realized by reducing imports of industrial goods, including machinery and equipment from Western Europe and Japan, and expanding exports after 1964, particularly oil, cotton, logs, and food. Short-term credit facilities were also employed extensively, especially in 1966 when the USSR sold very little gold --the smallest amount since the early 1950's. The post-Khrushchev regime evidently believed that Soviet gold reserves had reached a critical point and that no further reductions could be tolerated.

The USSR achieved a hard currency surplus in 1967 for the first time in about a decade. This surplus resulted from both expansion of exports and a reduction of imports of wheat rather than industrial goods. The return to a deficit position in 1968 resulted from a large increase in imports, particularly capital goods from Western Europe, but the deficit was small relative to those incurred in earlier years.

The USSR also responded to the financial crisis by reducing its orders for plant and equipment from the West in 1964 and 1965. These orders had been financed in part by Western medium-term credits, but by 1963 mounting repayments had more or less offset new credits (see Table 12). Known orders from the West were reduced from about \$550 million in 1963 to roughly \$300 million in 1964. This cut occurred despite the long-term credits made available to the USSR in place of medium-term credits. Soviet failure to take fuller advantage of these easier payment terms probably was due to the unwillingness of the Soviet leadership to mortgage future earnings at a time of considerable uncertainty about Soviet crop prospects and ability to expand exports. Orders declined even further in 1965.

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By 1966, however, the USSR increased its orders to an all-time high of \$900 million, including the Fiat contract worth about half the total. Apparently buoyed by good crop prospects and improvement in its hard currency trade balance, the USSR took greater advantage of the long-term credits offered by the West and has since maintained the high level of orders from the West (see Table 13).

In retrospect the Soviet response to what it considered a threat to its financial position seems prudent or even conservative. The regime stopped a decade-long drain on gold reserves and in 1967 had managed the first hard currency surplus in a decade. The major cost of the retrenchment was in the imports of Western capital goods forgone and, as a consequence, perhaps some slowdown in the growth of domestic output.

For the foreseeable future the Eastern European countries will not be able to diminish significantly their dependence on the USSR for raw materials, because of a continued dependence on the USSR as a market for their manufactures. The manufactures of Eastern European countries, like those of the USSR, generally are not competitive in the West. In the future, moreover, the outlook is dim for maintaining current export levels of agricultural products and raw materials to the West (on which Eastern Europe now depends to earn foreign exchange) because of higher tariff barriers and quota restrictions in the Common Market countries.

Given these political and economic realities, a continued expansion of Soviet trade with Eastern Europe is likely. After a brief period of slow growth, trade increased by about 11 percent in 1968 and is scheduled to grow at about the same rate in 1969 to a level of about \$12.4 billion. Because the planned growth of trade with Eastern Europe is significantly greater than the scheduled 6 percent growth of total Soviet trade, Eastern Europe's share in Soviet trade will be the highest in 15 years--about 60 percent.

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Soviet policy toward CEMA and that organization's future role in Soviet economic relations with Eastern Europe are unclear. Soviet officials have called for economic integration without really defining the term. Bilateral relations have served Moscow's needs in the past, and the USSR may be unwilling to abandon bilateralism as the principal means of conducting economic relations with CEMA members in the future. There has been an increasing clamor among most CEMA members for some form of economic integration within the framework of CEMA to help modernize their economies. The USSR, however, clearly will not accept any formula which effectively diminishes its economic and political control over Eastern Europe or significantly increases the costs of maintaining such control.

Trade with China has reached new lows, and, barring unforeseen developments, any upward movement in this trade is unlikely in the near future. Trade with North Korea has increased recently concomitant with the cooling off of North Korean-Chinese relations. For the near term, at least, this trade is likely to increase, the USSR having promised to provide some assistance in carrying out North Korea's long-term plan which ends in 1970. Soviet trade with North Vietnam and Mongolia will also increase, the volume of trade reflecting the substantial economic assistance being provided by the USSR. The volume of trade with Cuba is a function of Soviet assistance and Cuban sugar crops. Over the long term, this trade possibly will grow, but in 1969 it may decline. Trade with Yugoslavia has risen rapidly in recent years, but some leveling off is probable for the next year or two.

Reaffirmation of the primacy of Soviet trade with Eastern Europe and the more conservative approach to trade with the Industrial West seem to indicate a somewhat slower growth in trade with the latter. The USSR probably will continue to conserve and rebuild its gold reserves and, consequently, to limit its imports from the West largely to what can be paid for by export earnings. Unless

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formulas not yet apparent can be found to increase exports more rapidly, such a policy will exercise limitations on the growth of trade. The regime is unlikely to make extensive use of Western credits and may even make special efforts to reduce existing indebtedness.

Soviet efforts to increase imports of Western technical data are another indicator of a slower growth of Soviet imports from the West. In this connection, the USSR has concluded a number of scientific and technical exchange agreements with France and the United Kingdom. Substantial amounts of US technical data have been imported. The acquisition of Western technical data without the purchase of equipment is designed to save the USSR foreign exchange that otherwise would be spent for imports of equipment. Of course, given the uneven Soviet performance in transforming these technical data into prototypes comparable to the Western models, this policy may be "pennywise and pound foolish."

The USSR has shown a tendency to emphasize imports from countries willing to accept increasing quantities of Soviet goods. Thus, trade with such countries as France, Italy, Japan, and the United Kingdom probably will increase relative to other countries.

II. Special Problems

A. Policy Toward Agriculture

The three years 1966-68 were favorable ones for Soviet agriculture. And, as has occurred several times in the recent past, a grandiose program for shoring up agriculture launched in a time of troubles (1963-65) is being allowed to peter out. The leadership once again is asking: Why spend scarce industrial resources in agriculture when the granaries are full and other sectors are clamoring for allocations?

The program for improving the state of Soviet agriculture, popularly termed the Brezhnev Program, was first spelled out at a Plenum of the CPSU in

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March 1965. It was elaborated upon at the Twenty-Third Party Congress and at another Plenum in the spring of 1966. Although specific plans for several major inputs were not announced, the implied plan for additions to total inputs entailed a boost of nearly 17 percent over the five years 1966-70, or 3 percent per year. This represented a substantial rise over the 11 percent (2 percent a year) increase in 1961-65. For inputs from industry (fixed investment and current purchases of materials) the plan implied a growth of about 90 percent for five years, or 13½ percent a year, compared with 62 percent or 10 percent a year for 1961-65. In addition to the resource plans for agriculture, a major expansion of the food processing industry was to be undertaken to accommodate the anticipated surge in the availability of raw foodstuffs. Finally, capacity in selected branches of industry was to be expanded to provide the flow of producer durables, construction materials, agricultural chemicals, and other producer goods necessary to support the higher levels of direct investment in agriculture and the food processing industry.

Important steps were taken during 1965-68 to implement some parts of the original Brezhnev Program, particularly those that did not depend primarily on industrially produced goods for agriculture. These parts included putting into effect plans for improved cropping practices (such as increased fallowing and better weed control), for the introduction of a variety of incentives for farmers, and for the relaxation of restrictions on private agricultural activity.

On the other hand, there have been major shortfalls in delivery to farms of investment goods (producer durables and construction materials) and other industrially produced materials. As a result, the growth of the stock of fixed assets (buildings, machinery, and equipment) during 1966-68 slowed to a rate one-half that called for in the 1966-70 plan directives and substantially below that of the preceding five years (see Table

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14). Similarly, the average annual rates of increase in the flows of industrially produced materials remained below those planned for 1966-70 as well as those achieved in the first half of the decade. The rate of growth of total investment was 9 percent, compared with a planned rate of 17½ percent and the rate of 11½ percent achieved in 1961-65 (see Table 14).

Especially noteworthy were the differential rates of growth in the two major components of productive investment in agriculture--machinery and equipment, and construction. The average annual growth of investment in machinery and equipment was only 4½ percent during 1966-68--less than one-third the average for 1961-65 and under one-quarter of the rate originally planned for 1966-70. Investment in these producer durables averaged less than 4 billion rubles a year in 1966-68, compared with a planned average of more than 6 billion rubles. In contrast, the average annual growth in construction (including livestock facilities and land reclamation) was 12 percent in 1966-68, a rate almost a third above the average attained in 1961-65 (9 ½ percent) but about three-quarters of the rate originally planned for 1966-70 (16½ percent). Also, the construction in rural areas of so-called "nonproductive" assets, such as municipal and communal facilities, schools, and auditoriums, has increased sharply. Such investment rose at an average annual rate of about 20 percent during 1966-68, twice the average posted during 1961-65, and equaled in size about one-fourth of total productive investment. Building of much-needed roads in rural areas has not been evident in this surge.

The growth of construction was relatively easy to achieve because most of the required materials are produced on the farms, and much of the labor is done by the regular farm labor force during the slack season. In addition, the required funds are in the hands of farm managers as a result of increased procurement prices.

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Deliveries of major types of machinery are far behind schedule. Deliveries of tractors and agricultural machinery during 1966-70 were scheduled to be nearly two-thirds above the deliveries for 1961-65. But during 1966-68 actual deliveries were only slightly more than one-third above those of the first three years (1961-63) of the previous five-year period. Similarly, deliveries of trucks during 1966-68 were up less than three-fourths from those of 1961-63, although a whopping 163 percent increase was targeted for 1966-70. Current indications are that relatively low rates of growth will continue into 1969 and perhaps into 1970.

Under the Brezhnev Program, newly irrigated land and newly drained land was to provide nearly one-third of the increase in gross agricultural production and grain output planned for 1966-70. Although investment in land reclamation thus far has proceeded at a somewhat brisker pace than other parts of the investment program, the total area reclaimed has not yet increased. Its average quality, however, is now higher. In 1966-68, investment in land amelioration was 5½ billion rubles, nearly 45 percent of the planned total for 1966-70. But annual gross additions of irrigated and drained land remained at about the 1965 level and cumulatively are only slightly more than one-third of the overall target for 1966-70. Because of this lag and because of stepped-up retirements of land previously reclaimed, the total stock of drained and irrigated land has remained unchanged.

The lag in the reclamation program apparently stems largely from what Brezhnev has called "bottlenecks which now hold up the progress of land improvement." Criticism in the press centers on (1) shortages of specialized machinery (canal

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diggers, pumps, and special land clearing machines), (2) use of obsolescent machinery with a low capacity (for example, inefficient single-bucket excavators instead of continuous-action rotary excavators), (3) shortage of operators for construction machinery, (4) a rapid "write-off" of machinery due to poor quality and lack of spare parts, and (5) lagging construction of drainage-pipe plants.

Speedy removal of such "bottlenecks" is not likely. Although gross additions to irrigated and drained acreage are scheduled to increase by a modest 9 percent in 1969, the total stock will continue to stagnate if current retirement rates continue. Indeed, there are indications that the costs of reclamation considerably exceed the benefits in many instances. The press has reported some incredible goofs in carrying out the program. For example, in an effort to hold down cost in draining vast tracts of bogs in Belorussia, drainage canals were built without sluice gates to regulate the water flow. This resulted in a drastic lowering of ground-water levels followed by such severe drying that "in summer the peat bogs turn into fine dust--and there are a great number of peat-bog duststorms, which carry away top soil along with seed.... Rivers have silted up and reservoirs have begun to dry up." Instead of the planned differential in yields of 60 percent between grain grown on drained and undrained land, the yield advantage actually obtained for drained land in 1967 in Belorussia was only 17 percent.

Brezhnev's program called for a large expansion in the use of agricultural chemicals--fertilizer and lime as soil additives, herbicides and pesticides as plant protection materials--as a means of boosting crop yields. Annual deliveries of fertilizer to agriculture were to reach 55 million tons by 1970, double the 1965 level. The new plan also called for the liming of 28 million hectares of croplands during 1966-70, a goal that would require a doubling by 1970 of output of lime for agricultural purposes. Finally production of herbicides, pesticides, and other plant protection materials was to increase 2.3 times between 1965 and 1970.

All of these programs are considerably behind schedule, some more so than others. Fertilizer deliveries are nearest to schedule, having increased by about

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one-third in 1966-68. However, less than 4 million tons of new production capacity was added annually during the period, nearly 20 percent less than the average for 1961-65. In the past three years, lime was applied to only about 40 percent of the total area planned for 1966-70. Much of the blame for this lag is officially placed on the lack of transport and spreading equipment. Although production of plant protection materials in 1968 was one-third above the small output in 1965, the rate of growth of output in 1966-68 remains far below that required to meet even one-half of the originally planned target. Moreover, net imports of these materials, a major source of supply for the farms, fell by two-thirds between 1965 and 1967.

With respect to plans for 1969, fertilizer deliveries are to increase 6 percent, a rate that would result in an increase in total deliveries even less than the 3.1 million tons averaged annually in 1966-68. An additional 5 million hectares are to be limed in 1969, leaving 11 million hectares to be limed in 1970 if the goal is to be attained. A 1969 target for output of plant protection chemicals was not announced.

The current priorities for the fertilizer program are especially obscure. In mid-1968 a grandiose plan was announced for adding 13 million tons of new mineral fertilizer production capacity in 1969 and also in 1970, more than three times the capacity added in 1968. This goal was reaffirmed at the session of the Supreme Soviet in December. At the same time, a relatively low goal for fertilizer output was set, and no special efforts apparently are being made to boost production of the equipment required for the new fertilizer plants. The production of chemical equipment has been growing at less than one-quarter the rate called for in the 1966-70 plan.

One aspect of the Brezhnev Program that has been overfulfilled is the decision to continue and accelerate the revolution in rural incomes that has occurred since 1953. During 1966-68 earnings of collective farmers increased 9.2 percent annually compared to annual increases of 6.7 percent envisaged in the 1966-70 plan. Similarly, since 1965 wages of state farm workers have risen faster than the wages of workers in industry

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and faster than planned. By relaxing coercion and improving incentives Stalin's heirs have tried to break the vicious cycle of low wages--low productivity --low production and thus increase production, lower costs and release labor for work in other sectors of the economy.

Soviet leaders must be disappointed with the results to date. Between 1953 and 1968, net output of farm products nearly doubled, but most of the growth occurred during 1953-58. Between 1958 and 1962, production stagnated, and it actually declined in 1963 and 1965. Good results during 1966-68 are largely the result of exceptionally good weather. Productivity gains in agriculture have been lower than planned and less than the growth of wages. As a result, costs have risen and farm employment has declined slowly. Farm workers that have migrated to the cities have tended to be youths and skilled workers, those most needed on the farms.

The failure of higher incomes to produce greater results is traceable to several factors. First, opportunities for farm workers to work at higher paying jobs, the source of much of the reluctance of farmers to put in more than a minimal effort into state agriculture, still persist. Daily earnings for the collective farmer remain higher and more certain from work on his private plot than from work in the socialized sector. Machine operators and other skilled farm workers can still earn more in industry than on the farm, and thus farms have been unable to recruit or retain the skilled labor necessary to boost efficiency. Second, a sharp differential continues to exist between rural and urban working and living conditions. And, too, higher money incomes have not been matched by goods and services. Farmers have more money than earlier, but their level of living has not changed significantly. This tends to dilute the incentive effect of the higher incomes. Third, the farm wage system which, in 1953, was capricious, inequitable, uncertain, and complex, has not been markedly improved. Workers cannot easily determine how to maximize their incomes, nor do they tend to work toward the goals set by the planners.

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Agricultural policy for the near future stresses continued emphasis on incentives. Yet the factors that impaired the efficacy of past pay raises seem likely to continue. Consequently, labor costs in agriculture will probably continue to rise and no sharp decline in farm employment is likely.

The priority to be accorded agriculture has been a subject of some controversy among the leadership. Party Secretary Brezhnev has been closely identified with agriculture since his speeches announcing major new programs at the March 1965 and May 1966 plenums. Since mid-1966, however, Brezhnev has projected for the most part a cautious, if not ambiguous, approach regarding implementation of the original programs. Although he continues to reaffirm the general line that "we must do more for agriculture," the tone and content of his speeches in the past two years have lacked the earlier sense of urgency, and he, as well as other Politburo members who have hewed to his position, have taken a "middle-of-the-road" course.

In contrast, D. S. Polyanskiy, the Politburo member most closely associated with Soviet agricultural policy, has consistently argued in favor of carrying out the new programs as originally spelled out. He has strongly denounced those "comrades" and "elements of the planning and economic apparatus" who "do not seem to understand the importance of a most rapid growth in agriculture" and who put forward "extremely dangerous" arguments for diverting funds from agriculture. No member of the leadership has publicly taken issue with Polyanskiy or has openly urged a cutback in the program plans promulgated in 1965-66. Kosygin, at least, seems to be satisfied with the de facto cutback implied in the slow rate of implementation of the program. In his public statements during the past two years, he has consistently dwelt on the successes in agriculture since 1965 and has given no intimation that the tempo of the program should be stepped up. On the contrary, he has stressed the need for the allocation of increased resources to other areas of consumption--services, soft goods, and consumer durables.

The results of the most recent party plenum on agriculture, held in October 1968, indicate that on

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the whole the leadership is content to emphasize the importance of agriculture's claim on resources, while not following up with specific plans for bailing out the lagging Brezhnev Program. At the plenum Brezhnev reaffirmed his commitment to the original programs and emphasized the need for "an increase in the rate of growth" of farm output "in the shortest possible time." He also asserted that "to reach a high level of agricultural production is possible only by placing a more powerful material-technical base at the disposal of collective and state farm production and branches servicing it." He even warned against complacency and against "balancing the figures at the expense of agriculture":

Frequently when planning agencies encounter difficulties in finding capital investment, they find a way out by ... using funds earmarked for agriculture. There are cases, too, when material resources /that is, other than investment goods/ allocated to agriculture are switched to other purposes.

These pious words were not followed with action. The plenum's resolution merely emphasized Brezhnev's call for better utilization of all "resources" and repeated his demand for "long-range master plans" of one kind or another. Calling for "the mobilization of reserves" and for "long-range studies" are standard ploys often used to avoid hard decisions about resource allocations. The plenum did not call for specific remedial measures to overcome the lag in implementing the original Brezhnev Program. Moreover, the plans for 1969 contain no such measures. Although differences of opinion as to agriculture's priority probably persist among the leaders, the official statements on agriculture following the plenum have displayed no sense of urgency about agriculture's problems and prospects.

B. The Problem of New Technology

From the outset of its industrialization drive the USSR has used every device available to keep abreast of world wide developments in technology, while simultaneously maintaining a policy of cultural and

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political isolation.* In the early 1930's the USSR borrowed technology from abroad on a massive scale via imports of machinery and equipment to further its goal of industrializing at breakneck speed. After a period of retrenchment that lasted from the late 1930's until the mid-1950's the USSR again went into the borrowing business on a broad front. It did so primarily by sharply increasing its imports of machinery and equipment from the industrial West.

Soviet technology has been further boosted by the purchase of foreign patents and licenses, by the conclusion of scientific and technical agreements with Western firms, and by the exploitation of foreign scientific and technical literature. A special institute under the Academy of Sciences conducts a large-scale program of abstracting and disseminating such literature; in 1967 some 16,350 foreign periodicals and 6,500 books were abstracted. Over the past decade the USSR also has actively participated in a program of scientific and technical exchanges with the United States, from which it must have benefited in terms of technological advance in civilian fields.

Finally, the USSR, particularly since 1955, has built up a large domestic capability to develop technology through a massive research and development establishment, which has worked out its own innovations and adapted foreign technologies to Soviet use. As a result, Soviet technology may be ahead of the West in a few military-related areas, such as large helicopters. Nevertheless, although the USSR now sells patents and licenses on its own technologies to the West, the innovations emanating from its research and development establishment have been few.

No precise measure of international differences in levels of technology has yet been devised, nor has a precise definition of technology gained general acceptance. An assortment of aggregative measures can be used, however, to give some quantitative content

* This report defines technology simply as the methods of converting raw materials into semifabricants and final products and the design of final products.

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to the impression obtained by all Western observers that the USSR is not on a par with the West in overall technology. The measures are: gross national product (GNP) per unit of labor and capital (factor productivity), GNP per worker (labor productivity), and value of capital stock per worker. The measures are summarized in Table 15. The data for Western Europe relate to 1964, and those for the USSR are for 1967; the estimate of factor productivity is based on an estimate for 1960 made by Abram Bergson* and extrapolated to 1967 by means of estimates of growth of inputs and output.

Each of these measures has serious limitations as an indicator of relative levels of technological development among countries. The measure "capital stock per worker" implies that all technology actually available for use is embodied in the capital stock, an assumption that would serve to define technology in an essentially physical and quite narrow way. Moreover, the technological composition (proportion of the old compared with new) of the stock varies among countries, and in any event international comparisons of values of capital stock, to say nothing of domestic valuations of the stock, are especially tenuous. The other two measures--GNP per worker and GNP per unit of capital and labor--pertain to relative productivity levels among countries. Obviously, productivity differences are attributable to many factors other than technology in the fairly narrow way defined in this report--for example, differences in natural resource endowments, levels of education, and managerial methods in the broad sense. Indeed, allowance for the effect of differences in the quality of the labor force (level of education and extent of female employment) reduces the "productivity gap" significantly, but the pattern is essentially the same. The USSR and Italy are at about two-fifths and Northwestern Europe is at about three-fifths of the US level.

With all appropriate reservations, differences in the technology actually being employed unquestionably constitute a major element in these international differences in productivity. They indicate clearly

* Bergson, Planning and Productivity Under Soviet Socialism, Columbia University Press, 1968, p. 22.

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that the average level of technology in the Soviet economy is far below that of the United States and also well below that of Western Europe. Moreover, these measures make inadequate allowance for the quality of what the technology produces. Were full allowance to be made for product quality, the average level of Soviet technology would be, comparatively, even lower than the level indicated above.

Although no attempt to quantify has been made because of lack of data, the average level of technology in use in the industrial sector alone is probably somewhat higher in the USSR relative to the West than is that for the economy as a whole. There are, however, enormous variations among the branches of industry, and within individual branches, in the level of technology vis-a-vis the West. Moreover, in all countries there are wide differences among individual plants in the age of the technology used, but the variation is much greater in the USSR than in the West. Within a given branch of industry some Soviet plants may use technologies equal to or even superior to the average for that industry in the United States or Western Europe. Within each branch, also, the Soviet average level relative to the West will differ widely among product groups. In no major branch, however, is the average technological level on a par with the average level in use in the United States or Western Europe. Roughly speaking, Soviet technology probably comes closest to Western levels in machinery (including electronics and military equipment) and in metallurgy, and it lags farthest behind in coal mining, forest products, textiles and clothing, and food processing. Chemicals, petroleum, electric power generation, and construction materials seem to occupy a middle position.

Within the conceptual and other limitations already specified, the aggregative measures of productivity can also be used to provide some notion of relative rates of technological progress. Thus they can reveal something about whether the technological gap between the USSR and the industrial West is widening or narrowing. Table 16 presents comparisons of average annual rates of growth of GNP per unit of capital and labor combined (factor productivity) for the USSR, the United States, and Western Europe for various periods.

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These data show that the rate of productivity growth in the USSR exceeded that of the United States during the 1950's, but was well below that for the 1960's. The Soviet rates were far below those of Western Europe, and especially below those for Italy and Western Germany, throughout the period. Indeed, the Soviet rate of growth in productivity is well below that for all major countries of Western Europe except the United Kingdom for the period 1950-64 as a whole. During 1960-64 the Soviet rate was less than half the rates achieved in all countries of Western Europe, including the United Kingdom.

Thus, assuming that trends in productivity reflect trends in technological development, the gap between the Soviet and US levels narrowed during the 1950's but has been widening during the 1960's. Compared with Western Europe, the relative position of the USSR has been worsening steadily since 1950. The relative deterioration of the Soviet position was greatest of all with respect to Italy, the country nearest to it in level of productivity in the mid-1960's. In summary, the USSR apparently has not shared in the technological revolution of the post-war period nearly to the extent that Western Europe has. The performance of Western Europe illustrates the catching up that could be expected of industrial countries which were temporarily behind in technology because of the war. The USSR, even further behind, has not caught up much, if any, military and space-related technology excepted.

The relative technological levels and trends among industrialized countries, at least in the manufacturing sector, are also reflected in the nature and extent of their trade with one another in machinery and equipment. The machinery industries are probably the most "technologically intensive" of the manufacturing industries. The industrialized countries of the West and Japan carry on a large trade in machinery with one another; each country is both a substantial importer and a substantial exporter in this trade. Also, as industrialization proceeds, the large surplus of machinery imports over exports, characteristic of a developing country, tends to decrease as the country develops its own capability to produce and sell machinery and equipment abroad. The pattern of trade

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for the USSR shows no such characteristics. In Soviet trade with the Developed West there is a large gap between the share of machinery in total imports and its share in total exports; machinery makes up one-third or more of total imports from the Developed West and a mere 2-3 percent of total exports to these countries. This large imbalance has remained essentially unchanged for the past decade. Its persistence suggests no significant improvement in the level of Soviet manufacturing technology relative to that of the West, including the ability to diversify and specialize production, and the ability to provide service for the machinery. This imbalance also persists, although to a lesser extent, in Soviet trade in machinery with the industrialized countries of Eastern Europe--East Germany, Poland, and Czechoslovakia.

Since the mid-1950's the USSR has been making great efforts to upgrade its industrial technology, both by substantially boosting expenditures on domestic research and development and by importing machinery and equipment from abroad. The former was directed very largely toward the military-space sector. During 1955-67 the USSR imported nearly \$4 billion in production machinery and equipment (excluding ships and marine equipment) from the West. Nearly 15 percent represented imports of plant and equipment for the consumer goods industries, and 30 percent represented imports of chemical equipment. The USSR, however, experienced considerable delay and difficulty in getting the imported plant and equipment installed and operating at capacity. The machinery and metalworking industry experienced a much more rapid growth in productivity than did industry as a whole during 1951-67. The rate of growth of capital stock in that sector was more than twice the average for industry. Hence, the average age of capital stock was declining rapidly, and presumably the average technology embodied in it was becoming more modern. The same above-average growth of capital stock in the petroleum and chemical industries, however, was not reflected in above-average growth in productivity.

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The worsening of the Soviet productivity position during the 1960's relative to the West could reflect a relatively greater lagging behind in technology. It could, however, also indicate the following:

(1) Divergent trends in the quality of the labor force. Although the educational attainment of the labor force and extent of female employment have increased somewhat faster in the Soviet Union than in the United States and Western Europe, available evidence indicates that the trends proceeded evenly throughout the period.

(2) Disparate trends in management of economic resources in the broad sense. The Soviet Union has been considerably less successful than the United States and Western Europe in shifting labor from agriculture to nonagricultural sectors, but the timing of the shift did not differ greatly among the countries.

(3) Economies of scale. All of the countries compared evidently benefited from this factor, the USSR perhaps less so than Western Europe; but again there is no evidence that this factor was much more important in the 1950's than in the 1960's.

In short, a hodgepodge of variables with divergent trends and effects is mixed up in the measure of productivity trends.* Management and technology are

* During 1950-62, both Italy and the USSR reduced the share of agriculture in total employment by 14 percentage points (from 43 to 29 for Italy and from 54 to 40 for the USSR). Edward F. Dennison attributes about 1 percentage point in the growth of Italy's GNP over this period to this "improved" allocation of resources. If a similar gain can be inferred for the USSR from the reallocation of labor, very little of the productivity residual remains to be explained by other factors. Indeed, it is possible that, if accurate allowance could be made for quality changes in the labor force, economies of scale, and misallocation of resources in the USSR, their total would significantly exceed the productivity residual. If so, this would imply, not the absence of technological progress, but a gross mismanagement of the technical progress (investment programs) and probably a worsening of the degree of mismanagement.

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important ones, however, and the ones that seem most likely to explain the worsening of the Soviet position vis-a-vis the West during the 1960's. In particular, the Soviet ability to manage investment programs seems to have deteriorated; there is evidence that the translation of investment rubles into plants in operation has been relatively more costly and has taken longer in the USSR since 1960, whereas such evidently was not the case in the United States and Western Europe. The two factors--management and technology--are closely intertwined, and their respective effects cannot be separated.

Soviet leaders are fully aware of the USSR's great technological lag behind the West. Clearly, they must also be distressed about the small return that the USSR has been getting in recent years from the use of its traditional method of problem-solving--the injection of massive resource inputs. In the 1960's the USSR has nearly tripled its outlays on "science," and total employment in scientific research and design organizations has nearly doubled. Gold reserves have been depleted to import plant and equipment from the West. Investment has continued to rise considerably faster than GNP, hence increasing its share in total output. Yet the return on new investment has declined sharply during the 1960's, in contrast to stability or a rise in the United States and Western Europe. Although stepping up the rate of technological advance in the economy has been recognized as the key need, how to achieve this has been far from clear. The voluminous press reporting of the 1960's on the problems in developing and introducing new technologies echoes the voluminous reporting of the 1950's on the same theme.

The current Soviet leadership is hoping to achieve a breakthrough in solving this chronic problem in a series of major economic reforms, some of which have been introduced piecemeal during the past three years and others of which are still in the process of implementation. One explicit objective of these reforms is to raise efficiency, primarily by speeding

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up the introduction of new technologies. One of them--the restoration of the industrial ministries--was effected in 1965, with the declared intent of restoring unity and direction to policy on new technology; the diffusion of responsibilities in this field was alleged to have been the major shortcoming of the system of regional economic councils (sovnarkhozy) introduced by Khrushchev in 1957. According to Soviet testimony, the benefits of the reorganization in this area have yet to be realized. Other reforms concern (1) revision of planning and incentives, (2) reform of the industrial price system, and (3) changes in organization and the system of incentives in the research and development complex. Infinitely complicated in detail, these three reforms are fairly simple in intent and concept, and tentative conclusions can be drawn about their likely impact on the rate of technical advance in the Soviet economy. The conclusions about the probable effects of the first two are based in part on an assessment of the experience thus far; the third one is still mainly on the drawing board.

The reform of planning and incentives, launched by Kosygin in late 1965, has now been extended to most of the industrial sector. In brief, the reforms broaden the authority of enterprise managers with regard to plan formulation, establish sales or profits and return on invested capital as the main success criteria for enterprises and the determinants of bonuses, and levy an interest charge on invested capital. Among other things, the new profit criteria and the interest charge are intended to lead enterprises to reduce costs by adopting new technologies and scrapping obsolescent equipment. The emphasis on sales and profits, in place of gross output, is supposed to spur the output of new and improved products. By all accounts, the new measures have had no such effect thus far, nor are they likely to have in the future. The reason is that the reform retains most of the features long characteristic of the Soviet system that have inhibited innovation in the past: centrally fixed plans for output, investment, and new technology; central physical allocation of key materials and machinery; and establishment of success criteria for enterprises that are based on fulfillment of plans. Moreover, great emphasis continues to be

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put on "tight" plans, and enterprise plan assignments are boosted after technological improvements are adopted. Finally, the greater independence of action granted to enterprise managers on paper is already being curtailed by the ministries, both through direct interference and through issuance of a host of detailed rules and regulations on how the new freedom is to be exercised.

With bonuses linked to plan fulfillment and with supply uncertainties undiminished, enterprise managers are unlikely to be any more eager to adopt new methods than before. Because of the perversities of Soviet prices, the charge on capital may lead them even to avoid the purchase of new machinery, whose payoff remains as hard to determine as before. Indeed, decisionmaking at the enterprise level is made much more difficult under the reform, because the new success criteria are inconsistent and extremely complicated and because many of the old arrangements were retained --special bonuses for introducing new technology, for adding new products, and for upgrading the quality of old ones. In short, the new so-called "economic levers" will not automatically foster innovation; it will continue to require "introduction" by the planners.

Along with these general reforms in planning and incentives, the USSR has adopted a new set of industrial prices and a new price system. The new, higher prices include an allowance for interest on capital for the first time. The new price system consists of the establishment of an enlarged and unified bureaucracy with broad price-fixing powers and the declared intent to use prices to influence enterprise behavior. The new Price Committees are explicitly charged with "raising the role of prices in promoting technological progress in all its many-sided aspects."

Press discussion thus far indicates unmistakably that the committees have every intent of carrying out this mandate literally. They are attempting to set prices in great detail. Prices fixed for individual machines and equipment are to be those that will encourage enterprises to buy new machines and get rid of old ones. Similarly, prices on consumer goods and industrial materials are to be juggled to accomplish the same objective. The prices on new products are to be set high enough to encourage their production, but not so high as to discourage their purchase.

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All this is to be done product by product by the new government price fixers, and changes are to be made as frequently as necessary. Already it has been announced that "to stimulate technical progress" enterprises will be informed that successive price reductions on their products will be made on specified dates. To set prices that will really accomplish these intended objectives means, in effect, to set market prices without markets. The magnitude of the task defies description, but an army of government clerks seems determined to take it on. The result will be further complication of the decisionmaking process and further bureaucratization of the system.

The guidelines for far-reaching changes in organization and incentives in the research and development establishment were set forth by government decree in October 1968. The State Committee for Science and Technology is to coordinate the drafting of detailed instructions for implementing these policies, and experimental changes are to begin in 1969. The program, in effect, extends the principles of the economic reform in industry to the R&D sector. Wages and bonuses for individual scientists and the profits of research institutes are to be based in part on calculations of the economic effectiveness of their work. Organizational changes will be made throughout the research establishment, as required, to reduce the cost of the program and to link its work more closely with the needs of producing enterprises.

Although it is too early to evaluate the full significance of the new program, its possible favorable long-term results may be limited by bureaucratic inertia and resistance to some of the proposed new techniques. Delays, temporary confusion, and much dissatisfaction are likely to result from the numerous reorganizations and other changes to be brought about by the implementation of the resolution. It subjects academy and university research institutes to periodic review using the same criteria of effectiveness applied to industrial research establishments. The research programs in these institutions therefore can be expected to give more emphasis to applied research. The high status traditionally enjoyed by scientists and engineers in the USSR and the absence of economic success indicators and accountability have led to a degree of independence of action for the Soviet R&D community. The new program will tend to decrease this independence, which may or may not be beneficial.

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C. The Burden of Defense and Space Spending

The persistent escalation of the military competition with the West has been and continues to be a factor retarding Soviet growth. In an economy as taut as the USSR's, military programs represent a direct and certain diversion of resources away from other programs. Indeed, to maintain military production often requires greater sacrifice than to carry on an equivalent value of civilian production. For example, investment in new plant and equipment for defense must be greater than in a comparable segment of civilian industry simply to meet the enormous problem of obsolescence in military products and to provide for standby defense capacity not found in civilian industry.

After the Korean War, total defense expenditures declined somewhat in the USSR, thereby helping the investment boom of the 1950's. Expenditures jumped sharply in 1962, leveled off in 1963-65 and spurted again in 1966-68 (see Table 17). After 1952, however, outlays for procurement of advanced military equipment and for research and development in the military space sector rose far more rapidly than total defense expenditures. The work on the increasingly sophisticated aircraft, missile, and space equipment skimmed off the best of the available production facilities, designers, and scientists and certainly retarded investment programs and technological progress in the civilian sector.

The impact of military-space programs falls predominantly on Soviet industry and particularly the machinery sector of industry. In 1968 about 10 percent of the final output of industry was given over to defense and space needs, while procurement of military machinery and equipment claimed 21 percent of machinery output. In certain key areas such as electronics the share of output channeled into military-space programs is still larger. While a sizable portion of current industrial production is being set aside for strategic purposes, about three-fourths of the research and development establishment works on military and space programs. The denial of these skilled resources to the civilian economy contributed to the Soviet failure to maintain rates of technological progress in the 1960's.

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In the years ahead the USSR might be faced with an acceleration of the arms race. Keeping pace with the West could easily raise Soviet defense spending by about 25 percent or 5 billion rubles per year by the mid-1970's. The resources represented by 5 billion rubles are large. For example, 5 billion rubles:

(1) nearly equals current annual expenditures for construction of weapons systems sites plus purchases of all military weapons and equipment,

(2) is about three times as much as current annual fixed investment in the iron and steel industry,

(3) is twice as much as current investment in the industries manufacturing consumer goods, and

(4) equals almost one-third of all current fixed investment in heavy industry.

A rise in military spending of this magnitude, then, would necessarily affect civilian investment programs adversely and restrain productivity gains by preventing the release to the civilian economy of a larger share of the better scientific and engineering manpower.

On the other hand, an arms control agreement would permit a faster growth of capital stock and might have an even greater effect on productivity. Although under such an agreement, the USSR would presumably continue to pursue a vigorous military research and development program, some of the managerial, engineering, and skilled production personnel that would otherwise be engaged in military production could be released to the civilian sector.

Nonetheless, the burden of Soviet military (and space) programs should be appraised against the background of a rapidly increasing national product. Soviet GNP in 1968 was 2 1/3 times as large as GNP in the Korean War year of 1952, while expenditures on goods and services for defense and space were only 30 percent greater. As a result the share of GNP at factor cost devoted to defense and space activities dwindled from 15 percent in 1952 to 8 percent in 1968 (see Table 18). New fixed investment--always a favored claimant of Soviet output--took an even larger share of GNP. This was due in part to a rise in capital-output ratios and declining rates of growth of GNP.

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Although expenditures in defense and space of the order of 20 billion rubles (the 1968 level) represent a very large absolute waste for the Soviet economy, the change in overall shares of GNP over time suggests that the relative burden is not as critical as it once was.* The Soviet economy is now so large (half the size of current US GNP and the same size as US GNP at the beginning of the Korean War) that even moderate rates of growth should provide the leadership with a good deal of elbow room. In the 1950's, decisions to raise expenditures on defense by a given amount of rubles implied a far greater burden on capacity than they do today. As a result, the USSR is not likely to be deflected from any future military program that it considers genuinely required for its security.

* Estimated total expenditures for defense are derived by direct costing of known and estimated Soviet military programs, in constant 1955 prices. This includes an allowance for Soviet space programs and for military R&D, most of which are not financed through the Defense category of the Soviet budget. While the R&D and space cost estimates explain most of the divergence between the explicit budget allocation for defense in 1968--16.7 billion rubles--and estimated total expenditures, price effects and uncertainties about Soviet accounting practices--relating to such things as military aid and military reserves--introduce additional problems of comparability. For example, the 1968 figure for budget outlays for defense includes the effects of the 1967 price reforms.

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Appendix

Statistical Tables

NOTE

Rates of growth and other statistical comparisons in the tables which follow have been carried out numerically to the degree required to make valid comparisons. The presentation of the data to the first decimal point, however, does not necessarily reflect a comparable degree of accuracy in either the absolute level of a given aggregate value or in the absolute difference between two values.

The base year used in deriving average annual rates of growth is the year preceding the given year.

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Table 1
USSR: Indicators of Economic Growth*
1961-68

Average Annual Rates of Growth (Percent)			
	1961-65	1966-67	1968
Gross national product	5.0	5.8	5.5
Producing sectors			
Agricultural sector <u>a/</u>	3.4	4.6	4.0
Nonagricultural sectors	6.0	6.5	6.0
Industry	6.6	7.1	6.1
Other	5.5	6.1	6.0
Principal end uses			
Consumption (per capita)	2.8	5.1	4.8
Investment	6.3	7.9	8.4
Producer-oriented	7.3	5.2	N.A.
Consumer-oriented <u>b/</u>	5.6	10.0	N.A.
Defense	2.9	6.6	3 to 5

a. This measure of agricultural output excludes intra-agricultural use of farm products but does not make an adjustment for purchases by agriculture from other sectors. Net output, or value added in agriculture, grew by an average of 2.4 percent a year in 1961-65 and 3.7 percent a year in 1966-67 and in 1968.

b. Consumer-oriented investment comprises investment in agriculture, light and food industry, housing, and services.

* The base year for the calculations shown in each column is the year before the stated initial year of the period; that is, the average annual rate of increase for 1961-68 is computed by relating the data in 1968 to the base year 1960.

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Table 2

USSR: Indicators of Capital Formation
1961-68

Average Annual Rates of Growth (Percent)				
	<u>1961-65</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
Gross additions of new fixed capital a/	6.5	7.1	8.8	6.0
Backlog of unfinished construction b/	6.7	9.8	10.0	14.5 <u>c/</u>
Labor productivity in construction	5.2	5.1	6.5	4.0

a. Gross additions of new fixed capital differs from gross fixed investment in that it is supposed to count only those investment projects which were completed.

b. Some equipment installed in unfinished plants is included in this category.

c. Estimated.

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Table 3

USSR: Production of Major Crops
and Livestock Products
1965-68

	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
	<u>Annual Rates of Growth</u> (Percent)			
Crops	-6	12	3	5
Livestock products <u>a/</u>	16½	7	6	2½
	<u>Million Metric Tons</u>			
Major crops and live- stock products <u>b/</u>				
Grain	100	140	122	135
Potatoes	88.7	87.9	95.5	101.6
Sugar beets	72.3	74.0	87.1	93.6
Cotton	5.7	6.0	6.0	6.0
Vegetables	17.6	17.9	20.5	18.5
Meat	8.8	9.5	10.1	10.2
Milk	68.2	71.4	75.1	77.2
Eggs (billion)	29.1	31.7	33.9	35.5

a. Excluding changes in inventories of herds.

b. Estimates of production are lower than official claims for grain, meat, and milk.

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Table 4

USSR: Planned and Actual Flow
of Resources to Agriculture
1966-70

	1966-67	1968		1966-70
	<u>Actual</u>	<u>Plan</u>	<u>Actual</u>	<u>Plan</u>
	Average Annual Rates of Growth (Percent)			
Machinery deliveries				
Tractors	9½	7	1½	13½
Trucks	37	12½	-½	41
Other agricultural machinery	3	9	6	13
Mineral fertilizer deliveries	11½	4½	8	15
	Million Acres per Year			
Land reclamation <u>a/</u>	2.7	2.8	2.6	4.4 <u>b/</u>

a. Gross addition to irrigated and drained area.

*b. The 1966-70 plan specified gross addition of
21 million to 23 million acres for the plan period.*

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Table 5
USSR: Growth in Industrial Production
1961-68

<u>Average Annual Rates of Growth (Percent)</u>				
	<u>1961-65</u>	<u>1966</u>	<u>1967</u>	<u>1968 (Prelim- inary)</u>
<i>Industrial produc- tion</i>	6.6	6.9	7.2	6.1
Industrial materials	7.0	6.7	6.9	4.9
Fuels and power	6.7	5.1	5.4	4.3
Metals	8.1	8.9	7.8	5.4
Forest products and paper	3.9	3.0	6.5	4.2
Construction materials	8.1	9.9	8.0	3.6
Chemicals	10.9	9.0	9.5	8.7
Machinery	7.1	8.5	8.2	8.5
Nondurable consumer goods	4.8	5.1	6.3	5.3
Soft goods	3.2	7.4	6.7	5.7
Processed foods	6.7	2.6	5.8	4.8

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Table 6

USSR: Recent Growth of Output
of Important Products of Industry
1966-68 and Plan for 1966-70

Average Annual Rates of Growth (Percent)			
	<u>1966-67</u>	<u>1968</u>	<u>1966-70</u> <u>Plan ^a</u>
Fuels and power			
Coal	1.5	-0.2	3.0
Crude oil	8.9	7.3	7.6
Gas	10.9	7.4	12.4
Electric power	7.7	8.6	10.6
Ferrous ores and metals			
Iron ore	4.7	5.2	7.9
Pig iron	6.3	5.3	7.6
Crude steel	6.0	4.2	6.8
Rolled steel	7.4	4.0	6.5
Other basic materials			
Commercial timber	2.4	-0.4	1.2
Cement	8.2	3.2	7.2
Machinery			
Trucks	7.3	9.3	10.5
Chemical equipment	5.4	4.0	16.0

a. Midpoint of range.

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Table 7

USSR: Gross Additions of New Capacity a/
1961-68

	Unit	1961-65 Average	1966	1967	1968 b/
Electric power stations	Million kilowatts	9.6	10	9.6	10.5
Coal	Million tons	16	20.6	19.6	12.5
Mainline and branch gas pipeline	Thousand kilometers	4.4	5.3	5.2	3.4
Mainline oil and product pipelines	Thousand kilometers	2.4	1.4	2.9	1.0
Steel	Million tons	3.1	5.1	1.4	1.4
Rolled ferrous metal (finished)	Million tons	1.8	4.8	2.7	0.7
Cement	Million tons	5.6	3.9	2.3	2.8
Cellulose	Thousand tons	266	533	381	343
Mineral fertilizers	Million tons	4.7	3.4	3.3	5
Chemical fibers	Thousand tons	44	47	15	15.4
Motor vehicles	Thousand	31.3	66.7	57.8	43
Turbines	Thousand kilowatts	618	760	967	710
Looms (assemblies)	per year				
Leather footwear	Thousand	10.5	12.7	9	11
Granulated sugar	Million pairs	11	14	22	55
	Thousand quintals	236	248	155	110
	of processed sugarbeet per day				
Meat	Tons per shift	1,000	800	500	268
Whole milk products	Thousand tons of milk per shift	2.5	1.6	3.1	2.0

a. Capacities commissioned.

b. Preliminary.

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Table 8

USSR: Indicators of Changes in Consumer Welfare
1961-68

<u>Average Annual Rates of Growth (Percent)</u>				
	<u>1961-65</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
Per capita real income <u>a/</u>	3.6	6.0	5.8	6.1
Factors affecting the growth of real income				
Average earnings of wage and salary workers <u>a/</u>	3.6	3.8	4.2	7.5
Public consumption funds <u>a/</u> <u>b/</u>	8.7	8.9	8.9	11
Per capita consumption	2.8	4.9	5.3	4.8
Food	2.0	3.7	4.0	3.3
Soft goods	1.4	6.0	7.8	6.2
Durable goods	8.0	9.7	9.3	7.0

a. Soviet official data.

b. Including the financing of items such as pensions, stipends, leave pay, education, and medical services.

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Table 9
Geographic Distribution of Soviet Trade a/

Area	1958		1959		1961		1963		1965		1966		1967		1968 b/	
	Value	Per- cent	Value	Per- cent	Value	Per- cent	Value	Per- cent	Value	Per- cent	Value	Per- cent	Value	Per- cent	Value	Per- cent
Total	8,649	100.0	10,523	100.0	11,826	100.0	14,331	100.0	16,233	100.0	16,754	100.0	18,185	100.0	20,050	100
Communist countries	6,378	73.7	7,921	75.3	8,468	71.6	10,086	70.4	11,166	68.8	11,137	66.5	12,321	67.8	13,500	67
Eastern																
Europe	4,467	51.6	5,470	52.0	6,444	54.5	8,310	58.0	9,225	56.8	9,154	54.6	10,129	55.7	11,200	56
China	1,515	17.5	2,055	19.5	919	7.8	600	4.2	417	2.6	318	1.9	107	0.6		
Other c/	395	4.6	396	3.8	1,105	9.3	1,176	8.2	1,524	9.4	1,665	9.9	2,085	11.5	2,300	11
Free World	2,271	26.3	2,602	24.7	3,358	28.4	4,245	29.6	5,067	31.2	5,617	33.5	5,864	32.2	6,550	33
Industrial																
West	1,315	15.2	1,636	15.5	2,162	18.3	2,618	18.3	3,039	18.7	3,451	20.6	3,667	20.2	4,350	22
Less																
Developed countries g/	852	9.8	843	8.0	1,076	9.1	1,416	9.9	1,756	10.8	1,790	10.7	1,765	9.7	2,200	11
Unspecified	103	1.2	123	1.2	120	1.0	211	1.5	272	1.7	376	2.2	430	2.4		

a. Because of rounding, components may not add to the totals shown.

b. Estimated.

c. Other Communist countries include Cuba in 1960-68. Before 1960, Cuba is included in the less developed countries of the Free World.

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Table 10
Soviet Trade in Selected Commodities

Commodity	Value in Million US \$					
	1958		1962		1965	
	Value	Percent	Value	Percent	Value	Percent
<u>Exports</u>						
<i>Total</i>	4,298	100.0	7,030	100.0	8,175	100.0
Of which:						
Machinery and equipment	795	18.5	1,169	16.6	1,636	20.0
Petroleum and petroleum products	430	10.0	804	11.4	999	12.2
Base metals and manufactures	693	16.1	1,010	14.4	1,329	16.3
Chemicals	118	2.7	179	2.5	229	2.8
Wood and wood products	241	5.6	420	6.0	594	7.3
Food	511	11.9	912	13.0	659	8.0
<u>Imports</u>						
<i>Total</i>	4,350	100.0	6,455	100.0	8,058	100.0
Of which:						
Machinery and equipment	1,065	24.5	2,245	34.8	2,692	33.4
Consumer goods	1,187	27.3	1,827	28.3	2,654	32.9
Food	563	12.9	713	11.0	1,510	18.7
Manufactured goods	624	14.3	1,114	17.3	1,144	14.2
					1,442	18.2
					1,279	16.2
					2,565	32.4
					2,721	34.4
					2,917	34.2
					2,858	33.5
					1,238	14.5
					1,620	19.0

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Table 11

Soviet Hard Currency Current Account Balance,
Imports of Wheat, and Sales of Gold

Million US \$			
<u>Year</u>	<u>Current Account Balance</u>	<u>Imports of Wheat <u>a/</u></u>	<u>Sales of Gold <u>b/</u></u>
1959	-77	12	303
1960	-332	0	149
1961	-297	31	310
1962	-335	0	239
1963	-364	187	523
1964	-569	570	520
1965	-229	409	490
1966	-280	495	45
1967	+104	147	10
1968 <u>c/</u>	-95	110	10

a. Including wheat flour; excluding transportation costs.

b. Minimum estimates.

c. Preliminary.

Table 12

Estimated Soviet Drawings
and Scheduled Repayments on Western Medium-Term
and Long-Term Credits a/

Million US \$				
<u>Year</u>	<u>New Credits</u>	<u>Repayments</u>	<u>Interest</u>	<u>Net Credits</u>
1963	140	130	14	-4
1964	170	147	15	8
1965 <u>b/</u>	200	150	17	33
1966	265	149	21	95
1967	255	144	29	82
1968 <u>c/</u>	285	180	36	69

a. Based on contractual and other information.
Plus or minus 10 percent.

b. The first known drawings on long-term credits
took place in 1965.

c. Preliminary.

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Table 13

Soviet Orders for Machinery and Equipment
from the Industrial West a/

Category	Million US \$		
	1966	1967	1968
<i>Total</i>	904	563	668
Chemical and petrochemical	123	94	86
Timber and wood processing	69	6	143
Textile manufacturing	59	104	9
Automotive manufacturing facilities	462	47	74 <u>b/</u>
Ships and marine equipment	24	75	139
Oil refining and pipeline equipment	19	12	35
Metalworking and metal-lurgy	17	22	33
Food processing	52	41	30
Electronics	10	20	9
Others <u>c/</u>	68	142	110

a. Excluding Finland. Because of rounding, components may not add to totals shown.

b. Including plant to manufacture rubber products valued at \$54 million. The plant could also be subsumed under the category "chemical and petrochemical."

c. Including a wide variety of plants and equipment with consumer orientation -- for example, production of footwear, refrigerators, ballpoint pens, and the like. Also including printing equipment, telephone equipment, medical equipment, and special trucks.

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Table 14

USSR: Average Annual Rates of Growth
of Selected Inputs in Agriculture
1961-70

	Percent					
	<u>1961-65</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1966-70 Plan</u>
Fixed assets <u>a/</u>	10½	9	6	7	7½	13½
Current pur- chases <u>b/</u>	8½	11	10	7	5	9½
Annual invest- ment <u>c/</u>	11½	9½	9½	7	10½	17½
Construction	9½	12½	14½	8½	12½	16½
Machinery and equipment	14½	6	3	5	7½	18½

a. Change in the gross value of reproducible physical assets (buildings, structures, and machinery and equipment) and draft animals.

b. Change in purchase of materials from outside agriculture for use in current production activities -- fertilizer, electric power, fuels and lubricants, current repair services, and industrially processed feeds.

c. Productive investment only. Average annual rates of growth for 1961-65 and plan 1966-70 are constant growth rates calculated to exhaust cumulative investment, deliveries, or production for the two five-year periods when projected from the base years 1960 and 1965, respectively.

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Table 15

Approximations of Relative Levels
of Technological Advancement
of the United States, Western Europe, and the USSR
in the Mid-1960's a/

	<u>GNP per Unit of Capital and Labor</u>	<u>GNP per Worker</u>	<u>Capital Stock per Worker</u>
United States	100	100	100
Northwest Europe	55	48	45
Italy	35	33	31
USSR	34	33	31

a. All percentage comparisons of levels of GNP, productivity, and expenditures for various purposes given in this report are the geometric means of two comparisons -- one carried out in US prices and one carried out in the domestic prices of the countries being compared.

Table 16

Comparison of Average Annual Rates of Growth
of Factor Productivity of the
United States, Western Europe, and the USSR

	<u>1951-60</u>	<u>1961-67</u>
United States	1.7	2.7
USSR	2.2	1.4

	<u>1950-64</u>	<u>1960-64</u>
United States	2.0	3.0
Northwest Europe	3.2	3.0
Italy	4.4	4.5
USSR	1.9	1.0

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Table 17

USSR: Average Annual Rates of Growth in Defense
and Space Outlays, 1951-68

	<u>1951-68</u>	<u>1951-52</u>	<u>1953-55</u>	<u>1956-61</u>	<u>1962-65</u>	<u>1966-68</u>
Total defense and space	2.6	11.0	1.4	-0.8	2.8	4.7
Procurement of military hard- ware	5.5	45.0	7.5	-1.2	-1.1	4.1
Military-space R&D	15.3	9.7	20.0	20.0	13.1	8.2

Table 18

USSR: Shares of Major End Uses in Total GNP
at Factor Cost, Selected Years, 1950-68

	Percent					
	<u>1950</u>	<u>1952</u>	<u>1955</u>	<u>1960</u>	<u>1964</u>	<u>1968</u>
Consumption	60	61	61	59	56	56
New fixed investment	12	14	16	23	23	26
Defense/space	14	15	13	9	8	8
Other <u>a/</u>	14	10	10	9	13	10

a. Includes inventory change, capital repair, civilian R&D,
and net exports.

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